



## NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

**36 CFR Parts 1224, 1225, and 1236**

**[FDMS No. NARA-20-0006; NARA-2022-066]**

**RIN 3095-AB99**

### **Federal Records Management: Digitizing Permanent Records and Reviewing Records Schedules**

**AGENCY:** National Archives and Records Administration (NARA).

**ACTION:** Final rule.

**SUMMARY:** The National Archives and Records Administration (NARA) is amending our records management regulations to add a subpart containing standards for digitizing permanent Federal records so that agencies may dispose of the source records, when appropriate and in accordance with the Federal Records Act amendments of 2014. NARA is also amending our records management regulations to add a subpart containing metadata requirements for transferring permanent digital records to the National Archives of the United States. Finally, NARA is making a revision to our records schedule review provisions to establish a requirement for agencies to review, every five years, all records schedules that are ten years old and older, based on the date NARA approved the schedule.

**DATES:** This rule is effective on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Regulatory and External Policy Program (MP); Suite 4100; National Archives and Records Administration; 8601 Adelphi Road; College Park, MD 20740-6001.

**FOR FURTHER INFORMATION CONTACT:** Edward Germino, Strategy and Performance Division, by email at [regulation\\_comments@nara.gov](mailto:regulation_comments@nara.gov), or by telephone at 301-837-3758.

Contact [rmstandards@nara.gov](mailto:rmstandards@nara.gov) with any questions on records management and digitization.

**SUPPLEMENTARY INFORMATION:**

## **Background**

NARA is amending 36 CFR chapter XII, subchapter B, part 1225, Scheduling Records, to set a timeframe for the required review of existing records schedules. The current regulations state that schedules should be reviewed “regularly.” This rulemaking clarifies the word “regularly” by establishing a timeframe for those periodic reviews. This is based upon a determination that many schedules have not been kept up-to-date or revised when needed. Therefore, NARA is revising the regulations to require that every five years agencies must review records schedules that are ten years old or older, based on the date NARA approved the schedule. Agencies will be required to complete their first review no later than [INSERT DATE 5 YEARS AND 30 DAYS AFTER DATE OF PUBLICATION IN FEDERAL REGISTER], which is five years after this rule becomes effective. Any actions to update schedules after the mandatory five-year review is completed will continue to be governed by other records management regulations within 36 CFR chapter XII, subchapter B and implementing NARA records management guidance.

In addition, NARA is amending 36 CFR part 1236, Electronic Records Management, by adding a new subpart that establishes standards for the digitization of permanent paper and photographic print records, including paper and photographs contained in mixed-media records. The standards in this rule apply retroactively to digitized permanent records that have not been transferred to the National Archives. In 2014, Public Law 113-187 amended the Federal Records Act at 44 U.S.C. 3302 to require NARA to issue standards for reproducing records digitally “with a view to the disposal of the original records.” The amendment applies to both temporary and permanent records.

This rulemaking covers only permanent records of the kinds listed above. NARA previously amended 36 CFR part 1236 to add standards for the digitization of temporary records, which constitute the majority of Federal records (RIN 3095-AB98, 84 FR 14265 (April 10, 2019), effective May 10, 2019). NARA plans to issue additional requirements for digitizing other

specific media types in future revisions to the rule. In the interim, agencies should contact [rmstandards@nara.gov](mailto:rmstandards@nara.gov) for guidance regarding digitizing other types of permanent records.

### **Digitizing and transferring permanent records**

These digitization standards for permanent records ensure that agencies can use digital versions for the same business purposes as the source records and ensure that the digital records will be appropriate for preservation in NARA's archival holdings. NARA intends the regulation to be neutral about who performs the digitizing activities for each agency, meaning Federal staff or vendors can perform the activities.

This rule defines the requirements for agencies to digitize source records as a records management activity as required by the 2014 amendments to the Federal Records Act, drawing from principles within the Federal Agencies Digital Guidelines Initiative (FADGI) Technical Guidelines for Digitizing Cultural Heritage Materials Creation of Raster Image Files (2016), and from International Organization for Standardization (ISO) Technical Specifications (TS) and Technical Reports (TR); specifically ISO 19264-1:2021 Photography — Archiving systems — Imaging systems quality analysis — Part 1: Reflective originals (<https://www.iso.org/standard/79172.html>), and ISO/TR 13028:2010, Information and documentation - Implementation guidelines for digitization of records (<https://www.iso.org/standard/52391.html>). FADGI also describes many recommended best practices that agencies may use to supplement, but not supersede, applicable regulations and NARA implementing guidance. This rule also provides agencies with the guidance necessary to digitize and dispose of source permanent records. These technical standards apply to both unclassified and classified national security records.

When managing digitized records, agencies must comply with other records management requirements identified in 36 CFR chapter XII, subchapter B. For example, this rule does not address how to transfer digitized records or what methods of physical destruction apply to source records. In addition, though this rule applies to digitizing classified records, it does not

address other standards specific to classified information, such as classified-specific metadata or acquiring secure equipment. These subjects are outside the scope of this regulation.

### **Proposed rule and public comments**

NARA published this rulemaking in the *Federal Register* as a proposed rule on December 1, 2020 (85 FR 77095) with a 60-day public comment period. NARA received sets of comments from 23 different individuals and groups with many signatories. Commenters included: professors; universities and larger academic groups; records and access organizations; digitizing experts, software developers, vendors, and contractors; Federal agencies; information security organizations; archival entities; and anonymous people.

### ***Comments on 36 CFR Parts 1224 and 1225***

NARA received some comments on the proposed revisions to 36 CFR parts 1224 and 1225, which primarily asked questions about when the five-year records schedule review cycle would begin, how it would be calculated, whether it includes the review alone or also any necessary actions flowing from the review, and suggestions for requiring advisory boards and expert consultations as part of each review. Another comment discussed the shift to “big bucket and media neutral” scheduling approaches, which are less granular and provide only very general descriptions of the records.

The new requirements state that every five years, agencies must review all records schedules that are ten years old and older, based on the date NARA approved the schedule. NARA believes that setting the time frame for these review cycles on a regular basis will lead to improvements to Federal records management operations. Agencies will be required to complete their first review five years after the effective date of this rulemaking.

NARA recognizes that there are different ways to approach the cyclical review requirement and we are leaving that up to individual agencies. For example, some agencies may want to annually review the schedules that are ten years old or older on a rotational basis that ensures they are all reviewed every five years, while others may want to review all applicable

schedules in a single, comprehensive review every five years. An agency's approach will depend on multiple factors, including the complexity of the schedules, the number of schedules they have, and the frequency of organizational and mission changes, among others. For similar reasons, NARA is also leaving it up to agencies whether to use a fiscal or calendar year review cycle.

The reason NARA is adding a specific review cycle is to ensure agency records schedules are current and relevant for the nature and format of records the agency is actively creating and using. As a result, as long as agencies implement the review cycle and conduct it consistently, they have some options on the details of how they carry out such reviews. The five-year cycle applies only to the review requirement in these regulations. Requirements for submitting new schedules or requesting changes to existing ones are governed by other records management regulations within 36 CFR chapter XII, subchapter B and by implementing NARA records management guidance.

NARA is not planning to request authority from Congress or the White House to create advisory boards for the scheduling process. However, we have been working to improve how the public can participate in the scheduling process. NARA created a new webpage to explain how the public can engage in the process at <https://www.archives.gov/records-mgmt/public> and a YouTube video to explain the scheduling process at <https://youtu.be/iC1MFzmqLc>. NARA also changed our public comment processes in 2019 to increase the number of places where the public can find and view open schedules and to provide easier ways to comment. NARA previously published a notice in the *Federal Register* from which commenters would need to reach out to us for a copy of the schedule, start a schedule review period, and then provide any comments back to us by email. In 2019, we also started posting the schedules in a docket on [regulations.gov](https://www.regulations.gov) and people have been able to comment on them directly from there. NARA takes public comments very seriously and has made changes to final schedules based on public input, and refined the public notice and comment processes based on such feedback. Although NARA

is not planning to establish advisory boards, during the records appraisal process our staff consults widely with subject matter experts within agencies, including records officers and their staffs, legal counsel, information technology officials, and the program staff that create or maintain the records. They participate in the decision-making that occurs during both the agency's proposal development stage and our review and approval stage.

With the significant increase in the volume of records and information in the Federal Government, agencies have reported that flexible schedules ease the implementation of digital recordkeeping. Our experience over the past decade confirms that position. In 2021, we published an assessment report from NARA's Records Management Oversight and Reporting program on "big bucket schedule implementation." The report is on NARA's website at <https://www.archives.gov/files/records-mgmt/resources/big-bucket-schedule-implementation-report.pdf>. The report contains recommendations for NARA and for agencies, and we will continue to work on improving the big bucket scheduling guidance and agency implementation.

### ***Comments on 36 CFR Part 1236***

The comments on the new standards for digitizing permanent records in 36 CFR part 1236 covered a wide range of broad records management and oversight topics as well as specific technical topics:

#### ***Organization and clarity***

An overarching comment suggested that the regulation be simplified in structure and clarified in substance. NARA revised this part to make the requirements as straightforward as possible while still capturing the necessary level of detail. See edits to § 1236.42. For example, we consolidated all documentation requirements found in different sections into one comprehensive section.

Some commenters said that some technical terms were not always clear and additional definitions were needed. Most of the definitions can be found in the FADGI glossary

<https://www.digitizationguidelines.gov/glossary.php>. NARA added definitions for several technical terms.

### ***Oversight and destroying source records***

Many commenters were concerned about whether NARA would exercise oversight of agency digitization projects, and to what degree. The commenters stressed the importance of preserving source records for legal, evidentiary, and other purposes. They expressed concerns about whether there would be any check on agencies being permitted to destroy source records after digitizing them. They expressed concern that, without oversight, the likelihood that agencies would properly follow the requirements for digitizing before they destroy permanent records “is negligible” because they already do not properly follow existing regulations. They also expressed concern that agencies would not have enough funds to digitize properly and thus might cut corners and digitize in the cheapest and fastest way possible, rather than being concerned about longer-term archival needs. Other commenters suggested NARA include expertise from organizations such as the National Academy of Sciences in developing the digitization standards.

NARA is issuing these regulations to meet a statutory requirement. The 2014 amendments to the Federal Records Act required the Archivist of the United States to promulgate regulations that contain standards for digitizing with a view to disposing of source records.

In 2019, the Office of Management and Budget (OMB) and NARA issued OMB Memorandum M-19-21, *Transition to Electronic Records*, stating, “The Federal Government spends hundreds of millions of taxpayer dollars and thousands of hours annually to create, use, and store Federal records in analog (paper and other non-digital) formats. Maintaining large volumes of analog records requires dedicated resources, management attention, and security investments that should be applied to more effectively managing digital records. The processes that create analog records increase burden on citizens by requiring them to conduct business with

the Government in person or by mail, rather than online, and trap valuable Federal data in paper records where it can only be extracted manually and at great expense.” Digitizing and destroying source records is part of that transformation process.

These regulations apply to paper and photographic print records that have not yet been transferred to NARA or stored at a Federal Records Center. In addition to developing the regulatory standards, NARA is also implementing oversight actions. Since 2011, we have increased our capability to conduct records management inspections of all agencies that fall under the Federal Records Act by expanding NARA’s records management oversight program. This program performs inspections, assessments, and other related oversight activities. Digital records management, including digitization efforts, is included in these efforts. Agencies that are inspected are also required to create “plans of corrective action” related to any findings and recommendations and to submit progress reports to NARA until all actions have been taken. Agencies are also required to provide information about their digitization projects as part of the annual records management self-reporting cycle. For more information about NARA’s oversight program, please see our website at <https://www.archives.gov/records-mgmt>.

Although NARA is implementing oversight actions as mentioned above, we will not be conducting direct oversight of all digitization projects in all agencies, nor will we require agencies to share project management and quality management plans with us for approval before beginning a digitization project. NARA will add compliance with these regulations alongside the existing regulations to our inspections, assessments, and other oversight activities. NARA believes that these regulations establish requirements for agencies that will sufficiently increase oversight and quality assurance.

These regulations are clear about the standards agencies must follow and meet. Agencies that do not meet these standards do not have the authority to dispose of the source records. NARA applied its experience with conversion to microfilm when developing these standards. As a result, we have required regular checks of the imaging equipment, precise calibration, and



diligent quality control efforts to address many of the lessons of the microfilm era. NARA is confident the new standards contained in this rule will protect the records as they are transformed from analog to digital form. NARA will also communicate clearly that “choosing quick-and-cheap digitization processes” could lead to poor quality digital records that do not meet the agency’s business needs or NARA’s archival needs.

Section 1236.56 of these regulations also establishes the validation requirements agencies must fulfill. Agencies must not dispose of the source records until they validate that they have followed the requirements in other sections of the regulation for digitization and quality control (among other required assessments during a given digitization project). Once validated, the agency must have an applicable records schedule that addresses disposing of the source records after they have been digitized. If the agency validates that its digitization actions meet these new standards, it will be able to use a General Records Schedule as authority to dispose of the source records.

NARA believes the detailed level of information and the quality assessments and validating requirements in these regulations, as well as implementing guidance products NARA is preparing to issue and our other oversight and inspections, will be sufficient to allow agencies and NARA to jointly conduct required oversight. NARA believes these products will also help other oversight-related organizations, such as inspectors general or chief information security officers, to review and provide oversight to agency programs.

However, we also recognize that sometimes source records have intrinsic value and the very paper itself is a physical object that needs to be preserved as part of our nation’s history. NARA Bulletin 2020-01, *Guidance on OMB/NARA Memorandum Transition to Electronic Records (M-19-21)*, provides guidance to agencies on how to request an exception to the upcoming digital records goals and deadlines after which we will accept only digital records. The exception process offers a way for some paper records to continue to become part of the National Archives in their original paper form.

NARA is a leader in archival science and the preservation of records within the Federal Government, and has experts on staff to advise in the creation and preservation of digitized records. NARA regularly consults with the international records management and archival communities as well as with other non-governmental, cultural, and educational institutions on important topics related to records management, including digitization.

### ***Previously digitized records***

We also received many questions about records that agencies digitized before these regulations were issued but which have not yet been transferred to the National Archives of the United States and don't meet the standards in these new regulations.

The standards in these regulations apply to any paper and photographic print records that will be transferred to the National Archives after the deadlines established in OMB/NARA Memoranda. That includes any previously digitized permanent records still in agency control. If those digital versions do not meet the standards in these regulations, the agencies have other options. The first option is to send the paper versions of the previously digitized records to a NARA Federal Records Center by the upcoming digital records deadlines if they aren't scheduled for transfer to the National Archives before then. With this option, agencies would pay for the storage until the records' transfer date to the National Archives' legal custody, but would not have to re-digitize the records to the appropriate standards. Once the records transfer to the National Archives on the scheduled date, we will assume responsibility for digitizing the records for archival access.

The second option is to request an exception to the goals and deadlines established in OMB/NARA Memoranda, and as outlined in NARA guidance, discussed in the oversight comments section above.

The third option is to work with us to update relevant agency-specific records schedules so they address the previously digitized records and provide authority to transfer the digitized records to NARA and destroy the source records. This option would not be available in all cases

and will depend in part on the quality and other aspects of the digitized records. NARA recognizes that agencies have been scanning permanent records for decades and that such records will, in many cases, not meet all the standards in this regulation. However, many may meet enough of the requirements for the digitized versions to function effectively as archival records, depending on the kind of records they are. The goal is for agencies, NARA, and the public to have confidence in the previously digitized records and the processes used to digitize them, and to develop a clear understanding of what we will be accepting at the time of transfer. NARA is developing guidance to help agencies update records schedules for this purpose and will work individually with agencies that have previously digitized records. Any records schedules revised for this purpose will be published in the *Federal Register* for public review and comment.

A fourth option is that if digital records were printed and filed according to agency records management practices and agencies can find the source records—the digital versions—that were used to print and file, then agencies may be able to transfer those original digital versions instead of scanning the paper to re-create digitized versions.

A fifth option is for agencies to re-digitize their source records according to 36 CFR Part 1236.

Some agencies might find a combination of these options will be needed to address any issues with previously scanned paper records.

### ***Delayed transfers, access, and NARA resources***

Some commenters expressed a belief that our decision to accept only digital records after the upcoming digital records deadlines will lead to delays in agencies transferring records to the National Archives. They were concerned that NARA's infrastructure and staffing would not be sufficient to accession and then make available such huge volumes of digital records, meaning these regulations could effectively shut down access to records. Instead of delays, we believe agencies will transfer overdue permanent paper records rather than pay to digitize them.

OMB/NARA Memo M-19-21 states that agencies can transfer permanent paper records to NARA's Federal Records Centers Program before the upcoming digital records deadlines, and will then not be responsible for digitizing those records. NARA crafted several policies that encourage agencies to transfer overdue permanent records to the National Archives, including not accepting paper records after the deadlines, requiring agencies to stop storing inactive records in agency-operated records centers, and issuing regulations with digitization standards for temporary and permanent records.

NARA agrees that resources are critical for NARA to successfully accomplish our mission. NARA invests in our employees, and in developing and improving our tools, automated processes, and IT infrastructure to accession digital records. NARA's decision to pivot to accessioning digital records is part of a strategy to better manage all records in our holdings. NARA does not think this decision will impede access to records, but instead will help us improve access to born digital and digitized records.

### ***Image Quality and Quality Management***

Some commenters noted that we adjusted the DICE target values for the L20 and 21 patches. The relaxed standards for this category are tailored to documents with no content to be captured in those measurement regions. NARA acknowledges that there is a distinction between large scale in terms of size and high speed in terms of time.

Some commenters questioned whether the digitization imaging standards are exacting enough to ensure that handwritten comments or embossed seals will be captured when the records are digitized. The image quality requirements in the regulation are based on FADGI and ISO specifications and define a minimum set of requirements to be met. NARA included instructions, based in part on suggested language from commenters, in 36 CFR 1236.50 to evaluate the characteristics of source records, including those with legibility issues or special characteristics, and to select the imaging specifications that best capture all the information.

Commenters also questioned how to determine the severity of image defects, such as noise, streaks, or dust, and the usability of the resulting image. The image analysis described in § 1236.46 is designed to detect most image defects using objective measurements. That section also includes visual inspection steps to identify defects that cannot be discovered automatically. The agency is responsible for determining the acceptability of subjective factors. The standards in § 1236.46 call for the agency to proactively correct errors due to malfunctioning or improperly configured equipment or human error. If the agency affirms that they attempted all appropriate measures to minimize artifacts and defects, then they must determine whether the level of artifacts obscures information. Testing and good communications between quality management staff and project managers should enable the agency to address imaging defect issues prior to digitization and throughout any digitization project.

Some commenters questioned the accuracy of the values used for the technical parameters in the regulation. NARA updated the parameters to align with the most recent version of the FADGI guidelines.

NARA reorganized the Quality Management section to reflect suggestions to clarify who performs the various steps for quality management, assurance, control, and inspection. NARA further clarified what was to be inspected and whether to perform visual or automated inspection, and we also explained when to employ sampling ratios from 100% inspection requirements.

NARA revised § 1236.50 in response to requests to better explain what characteristics of records determine their suitability for either of the two imaging specifications.

### ***Optical Character Recognition (OCR)***

Commenters asked why the regulations do not require optical character recognition (OCR) scans of records during the digitization process. OCR accuracy can vary widely, and the results can require remedial actions to fix errors. Agencies are not required to OCR when they digitize records because NARA intends to OCR permanent records so that the results are

consistent when searching NARA's catalog. However, these regulations do not prevent agencies from performing OCR to meet their own business needs.

### ***File Formats***

Some commenters suggested that we expand the versions of PDF/A to include newer versions such as PDF/A-4. NARA revised § 1236.48 to allow for newer versions of PDF/A but prohibited some new features. Some commenters asked that we allow the use of PDF/A-2 with lossy JPEG2000 compression for use with digitized photographs. NARA determined that our processing and description requirements are best served by having photographs digitized using raster image formats including TIFF, JPEG2000, and PNG. Some commenters pointed out the discrepancy between acceptable formats listed in the appendix to NARA Bulletin 2014-04 and those listed in this regulation. NARA will update the format tables in 2014-04 so that they are consistent with this regulation.

Some commenters pointed out that once saved, PDF/A does not allow metadata to be added or edited. NARA revised language to explain that agencies should develop workflows to produce digital images and capture required metadata so they can be packaged as digital records. This work should be completed before the creation of PDF/A files.

The commenters asked that JPEG, CCITT G3/G4, and other forms of lossy compression be included and suggested that we allow "visually lossless," or lossy compression. NARA is not including CCITT G3 and G4 compression because these codecs are only appropriate for use with bitonal (black and white) color mode, which is not permitted. With regard to practitioners applying "judicious" lossy compression, we have updated the language in the regulation to allow agencies to apply visually lossless compression during digitization.

### ***Color***

Commenters recommended disallowing sRGB as an acceptable color option because it will result in less accurate color representation in the resultant digital records. NARA specifies five color spaces for agencies to choose from depending on the need to convey all information in

the source record. sRGB is an acceptable color space for many records such as modern textual paper documents, but not for photographic prints. Color is not mandatory for all records, but the regulation requires that if the original includes color, the document must be scanned in color.

### ***Protecting Against Loss***

Some commenters asked whether there are safeguards in place to protect against losing digital records entirely if they are compromised or corrupted. They questioned what hash value or algorithm agencies should use to monitor for corruption or alteration; and the frequency, schedule, grouping, and other details of fixity checks. Under the existing regulations at 36 CFR 1236.10, agencies are required to ensure that records are authentic and free of corruption or alteration. While hash values are the industry standard for monitoring digital records, due to the number of algorithms in use, it is impractical for us to specify a single algorithm to be used by all agencies to comply with this regulation. NARA specifies requirements in § 1236.10 for ensuring that records created under this regulation remain authentic, and we will provide additional information in upcoming implementing guidance.

Agencies are already required by other records management regulations in 36 CFR chapter XII, subchapter B to maintain digital records, including protections against loss. *See, for example*, 36 CFR 1222.26, 1222.34, and 1236.14. Once agencies transfer permanent records to the National Archives, we maintain them in the Electronic Records Archives (ERA), which has sufficient management and preservation controls to protect against loss of the records. NARA's digital preservation strategy is posted on our website at

<https://www.archives.gov/preservation/digital-preservation/strategy>.

### ***Interfiled Photographic Prints and Paper***

Another commenter explained that many agencies organize scans of multipage documents using PDF files and that textual records might have photo prints interfiled. The commenter stated that not including PDF/A-2 for scanned prints requires agencies to store scanned prints separately from textual records they were interfiled with, creating a higher risk of

loss. While we did not add PDF/A-2 as a file format for photographic prints, we clarified language in § 1236.48 to make it clear that when there are interspersed files, specifically a mix of photographic prints and predominately textual records, the agency must scan the photographs according to requirements in § 1236.50 and then may convert the image files to PDF files.

### ***Workflows***

The commenters also raised concerns about workflows, stating that prohibiting reformatting, in general, interferes with acceptable workflows. NARA updated the language to make clear that agencies may develop workflows in which they capture images in one format and assemble them into another format for final output, such as saving image files together in a PDF/A file. However, they must not transcode, or interpolate (upsample) files anywhere in the workflow.

### ***Metadata Concerns***

Some commenters raised concerns about metadata requirements labeled “mandatory if access restriction exists” rather than “mandatory if applicable”. They also raised concerns about access and use restrictions, such as why they are included and how they relate to court orders.

For any records subject to the access and use restrictions, agencies must populate the appropriate metadata labels so that the National Archives can manage the records appropriately. Court orders are one of the kinds of restrictions that might apply and would need to be reflected in the metadata. Our regulations at 36 CFR 1226.14 have long accounted for the possibility that a court might order that records be expunged, destroyed, or returned. In these situations, the existing regulations allow an agency to comply with the court order without fear of being in violation of the Federal Records Act. NARA expects that the court has considered all applicable laws when entering such orders and that they are necessary for the administration of justice. Agencies alert us to such a requirement, and other similar ones, by using the metadata labels for access and use restrictions. NARA revised § 1236.54 to provide better instructions for



embedding metadata and how it should be structured and labeled, as well as to clarify metadata requirements.

Another commenter was concerned that the metadata requirements did not seem to include a way to disclose that the records are digitized versions of physical records that may have been destroyed. This could be important for evidentiary events, such as eDiscovery or FOIA. While there is not a metadata element that explicitly flags records this way, the descriptive metadata table does include the mandatory data elements “source type” and “source dimensions,” which indicate that the source record was recorded on paper.

The commenters questioned whether the provenance of particular records and file/office arrangement of the source records will be preserved or recorded during digitization. Provenance and file/office records arrangement are aspects of intellectual control and metadata and are addressed in §§ 1236.42 and 1236.44, as well as § 1236.54.

A commenter questioned why NARA requires metadata to be transferred as a CSV file. CSV is the metadata format required by NARA for digital records processing.

The commenters asked for clarifications on transfer metadata guidance. NARA added a new section to clarify that transfer metadata requirements apply to all records—analogue, digitized, and born-digital.

### ***Archival Concerns***

Some commenters expressed concern that using improper equipment might damage source records. NARA added additional language in § 1236.50(c) making clear that agencies must use equipment capable of digitizing records without damaging them. Another commenter questioned how to document the required level of detail. NARA revised § 1236.44 to define the requirements that the Project Plan must identify physical characteristics that may influence the level of detail that must be captured. NARA also edited § 1236.50 and included more precise instructions in § 1236.42 directing agencies to evaluate the characteristics of source records and through testing and analysis, select the imaging specifications that best capture the information.

In addition, we received some comments about topics that are beyond the scope of these regulations and are addressed in other statutes, regulations, or guidance. These included questions about the specific equipment and processes for digitizing classified information, and about standards for archiving and transferring “born-digital” records to the National Archives. NARA included language to clarify the fact that agencies have additional requirements outside the scope of these regulations.

### ***Vendor/GSA***

Commenters raised concerns that FADGI-specific services do not currently appear on GSA Schedules and asked how NARA and GSA will manage vendors who offer these services. NARA will engage with GSA through NARA’s Federal Electronic Records Modernization Initiative (FERMI) program to update the GSA Schedules for Document Conversion and work with GSA to create self-certification opportunities for vendors that offer document conversion or digitizing services.

### ***Legal authority***

Some commenters questioned whether NARA exceeded its legal authority by stating that records will be accepted only in digital form. NARA has the legal authority to determine what file formats and media types it will accept for permanent records. When there are multiple versions of a record, it is appropriate to make choices about which version to preserve and which version to destroy. NARA considers digital records to be Federal records and will accept them in place of analog versions.

### **Regulatory analysis**

*Executive Order 12866, Regulatory Planning and Review, and Executive Order 13563, Improving Regulation and Regulation Review*

OMB has reviewed this rulemaking and determined it is not “significant” under section 3(f) of Executive Order 12866. It is not significant because it applies only to Federal agencies, updates the regulations due to a statutory requirement (to incorporate technological

developments and to account for changing technology and agency practices), and is not establishing a new program. Although the proposed revisions change existing requirements and add new ones for agencies, the requirements are necessary to keep the existing regulations up-to-date, comply with the statute, and ensure agencies are preserving records for the United States.

*Regulatory Flexibility Act (5 U.S.C. 601, et seq.)*

This review requires an agency to prepare an initial regulatory flexibility analysis and to publish alongside the proposed rule. This requirement does not apply if the agency certifies that the rulemaking will not, if promulgated, have a significant economic impact on a substantial number of small entities (5 U.S.C. 603). NARA certifies, after review and analysis, that this rulemaking will not have a significant adverse economic impact on small entities.

*Paperwork Reduction Act of 1995 (44 U.S.C. 3501, et seq.)*

The Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*) requires that agencies consider the impact of paperwork and other information collection burdens imposed on the public and, under the provisions of PRA section 3507(d), obtain approval from OMB for each collection of information they conduct, sponsor, or require through regulations. This rulemaking does not impose additional information collection requirements on the public that are subject to the Paperwork Reduction Act.

*Executive Order 13132, Federalism*

Executive Order (EO) 13132 requires agencies to ensure that state and local officials have the opportunity for meaningful and timely input when those agencies are developing regulatory policies that may have a substantial, direct effect on the states, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government. If the effects of the rule on state and local governments are sufficiently substantial, the agency must prepare a Federal assessment to assist senior policymakers. This rulemaking will not have any effects on state and local governments within the meaning of the E.O. Therefore, no Federalism assessment is required.

The Unfunded Mandates Reform Act requires that agencies determine whether any Federal mandate in the rulemaking may cause state, local, and tribal governments, in the aggregate, or cause the private sector to expend \$100 million in any one year. NARA certifies that this rulemaking does not contain a Federal mandate that may result in such an expenditure.

## **List of Subjects**

### **36 CFR Parts 1224 and 1225**

Archives and records, Records management, Records schedules, Scheduling records

### **36 CFR Part 1236**

Archives and records, Digitization, Digitized records, Digitizing, Digital records, Metadata, Permanent records, Records management, Quality assurance, Quality control, Quality management, Transfers

For the reasons discussed in the preamble, NARA amends 36 CFR parts 1224, 1225, and 1236 as follows:

## **PART 1224 – RECORDS DISPOSITION PROGRAMS**

1. The authority citation for part 1224 continues to read as follows:

**Authority:** 44 U.S.C. 2111, 2904, 3102, and 3301.

2. In § 1224.10, in paragraph (c), add a sentence at the end to read as follows:

### **§ 1224.10. What must agencies do to implement an effective records disposition program?**

\*\*\*\*\*

(c) \*\*\* Every five years, agencies must review all records schedules that are ten years old and older, based on the date NARA approved the schedule, and in accordance with § 1225.22(a) of this subchapter.

\*\*\*\*\*

## **PART 1225 – SCHEDULING RECORDS**

3. The authority citation for part 1225 continues to read as follows:

**Authority:** 44 U.S.C. 2111, 2904, 2905, 3102, and Chapter 33.

4. Amend § 1225.22 by:

- a. Revising the section heading;
- b. Removing the introductory text;
- c. Redesignating paragraphs (a) through (h) as paragraphs (b)(1) through (8);
- d. Further redesignating newly redesignated paragraphs (b)(8)(1) through (4) as paragraphs (b)(8)(i) through (iv);
- e. Adding new paragraph (a);
- f. Adding paragraph (b) introductory text; and
- g. Revising newly redesignated paragraph (b)(1).

The revisions and additions read as follows:

**§ 1225.22 When must agencies reschedule or review their records schedules?**

(a) Every five years, agencies must review all records schedules that are ten years old and older, based on the date that NARA approved the schedule. Agencies may also review their agency records schedules on a more frequent regular basis to determine if they remain accurate.

(b) Agencies must submit a new records schedule to NARA in the following situations:

(1) If an interagency reorganization reassigns functions to an existing department or agency, the gaining organization must submit a new records schedule to NARA within one year of the reorganization. Schedules approved for one department or independent agency do not apply to the records of other departments or agencies.

\*\*\*\*\*

**PART 1236 -- ELECTRONIC RECORDS MANAGEMENT**

5. The authority citation for part 1236 continues to read as follows:

**Authority:** 44 U.S.C. 2904, 3101, 3102, 3105, 3301, 3302, and 3312.

6. Amend § 1236.2 by:

a. Revising the section heading;

b. Adding in alphabetical order to paragraph (b) definitions for “Administrative metadata”, “Checksum”, “Descriptive metadata”, “Embedded metadata”, “Intellectual control,” “Media”, “Mixed-media files,” “Physical characteristics”, “Physical control”, “Project plan”, “Quality assurance (QA)”, “Quality control (QC)”, “Quality management (QM)”, “Technical metadata”, and “Validating”.

The revision and additions read as follows:

## **§ 1236.2 Definitions that apply to this part.**

\* \* \* \* \*

(b) \* \* \*

*Administrative metadata* are elements of information used to manage records and relate them to one another. Administrative metadata elements describe how a record was created, any access and use restrictions that apply to it, information about the record series to which it belongs, and the disposition schedule that identifies its retention period.

*Checksum* is a value that is computed on data and is used to authenticate information by indicating when a file has been corrupted or modified. This value is also called a “hash value,” “hash code,” “digest,” or simply “hash.”

*Descriptive metadata* are elements of information that describe the records or set of records itself. They apply to both the source records and any versions produced through digitization. Descriptive metadata for individual source records include such elements as the title of a record, a description of its contents, its creator, and the date it was created. These elements support searching for and discovering records.

\* \* \* \* \*

*Embedded metadata* are textual components that exist alongside the content (usually binary data) within the file. Embedded metadata may be used to make self-describing digital files that contain administrative rights, and technical metadata and can be appropriately managed outside of a recordkeeping system.

*Intellectual control* is the information necessary to identify and understand the content and context of the records.

*Media* are the physical forms on which records are stored, such as paper, photographs, compact discs, DVDs, analog tapes, flash drives, local hard drives, or servers.

\* \* \* \* \*

*Mixed-media files* are records in different forms of media. A file, when used in the phrase “mixed-media file,” is a group of records—regardless of location and type of media—that belong together or relate to a topic. For example, a mixed-media case file could be a box with paper notes, audio recordings of interviews, and a CD of photographs, along with physical evidence stored separately in an evidence locker. Records in a file may be in more than one media type because of how agencies create, maintain, and use records, shifts in technology, and the topic or activity involved.

*Physical characteristics* of source records include the media, the method that information is recorded, the physical condition of the material, and the smallest level of detail present. The physical characteristics of records printed on paper include: the type of paper (office paper, Thermofax, photographic print); the type of printing (laser printed, fax printed, typewritten, half-toned, handwritten); appearance (color, inks, continuous tone or monochrome images); size, and other methods of conveying information (embossed seals, stamps). These traits determine the methods and equipment used to digitize records.

*Physical control* is having the information necessary to physically manage records. This includes knowing where the records are housed, whether any records are missing or stored

separately, and the records' physical form (media types, the records' dimensions, and the physical characteristics).

*Project plan* is a document that identifies the records that are to be digitized, an estimate of their volume and of the media types that are present, the image quality parameters selected to capture necessary information, the date range of the records, a copy of the applicable agency records schedule(s); any indexes used to maintain intellectual and physical control; and a quality management (QM) section that describes quality assurance (QA) objectives, quality control (QC) procedures to identify and correct errors during digitization, and the QC reports that will be used to identify and remediate errors when detected.

*Quality assurance (QA)* refers to proactive QM activities focused on preventing defects by ensuring that a particular product or service achieves certain requirements or specifications. A QA program is heavily dependent on QC data to search for patterns and trends. QA activities also include controlled experiments, design reviews of digitization workflows, and system tests. QA programs can improve quality by creating plans and policies or by creating and conducting training.

*Quality control (QC)* refers to QM activities that examine products through inspection or testing to determine if they meet predetermined specifications. The purpose is to detect defects (deviations from predetermined requirements) in products or processes.

*Quality management (QM)* refers to the overall management functions and underlying activities that determine quality policies, objectives, and responsibilities, and that implement them through planning, control, assurance, and improvement methods within the quality system.

*Technical metadata* are elements of information that describe the properties of computer files, the hardware used to create them, and the parameters used by systems to render them. Technical metadata may include elements such as a file's byte size, file format and version, color encoding, and the type of equipment used to make the file (for example, camera name or scanner manufacturer).



\* \* \* \* \*

*Validating* is the process of ensuring that the records meet the requirements of this part.

7. Add subpart E to read as follows:

### **Subpart E -- Digitizing Permanent Federal Records**

Sec.

1236.40 Scope of this subpart.

1236.41 Definitions for this subpart.

1236.42 Records management requirements.

1236.44 Documenting digitization projects.

1236.46 Quality management requirements.

1236.48 File format requirements.

1236.50 Requirements for digitizing permanent paper and photographic print records.

1236.52 Requirements for digitizing permanent mixed-media records.

1236.54 Metadata requirements.

1236.56 Validating digitized records and disposition authorities.

### **Subpart E – Digitizing Permanent Federal Records**

#### **§ 1236.40 Scope of this subpart.**

(a) This subpart establishes processes and requirements to ensure that agencies:

(1) Identify the records the agency will digitize in each project;

(2) Account for all records covered by the project, regardless of media type;

(3) Implement quality management techniques to verify equipment performance and monitor processes to detect and correct errors;

(4) Produce complete and accurate digitized records that the agency can use for all the same purposes as the source records; and

(5) Validate that the resulting digitized records meet the standards in this subpart.

(b) This subpart covers the standards and procedures agencies must apply when digitizing permanent paper records using reflective digitization techniques. Such records include most paper-based documents, regardless of size, such as modern textual documents, maps, posters, manuscripts, graphic arts prints (for example, lithographs or intaglio), drawings, bound volumes,

and photographic prints. This subpart also covers any records that may be incorporated into mixed-media records.

(c) This subpart does not cover standards and procedures agencies must apply when digitizing permanent records using transmissive digitization techniques. Such records include photographic negatives, transparencies, aerial film, roll film, and micrographic and radiographic materials. In addition, this subpart does not cover digitizing records on dynamic media. Such records include motion picture film, video, and audio tapes.

(d) For guidance on digitizing out-of-scope media types or non-paper-based portions of mixed-media records, such as dynamic media, radiographic, negative or positive film, or other special media types, please contact the Records Management Policy and Standards Team by email at [rmstandards@nara.gov](mailto:rmstandards@nara.gov) or by phone at 301-837-1948.

(e) This subpart does not require that optical character recognition (OCR) be performed during digitization. However, these regulations do not prevent agencies from performing OCR to meet their business needs.

(f) This subpart does not address other applicable laws and regulations governing documents and digital files, including, but not limited to, proper handling of classified or controlled unclassified information (CUI) and compliance with 36 CFR part 1194 (section 508). Agencies should work with their legal counsel and other officials to ensure compliance with these and other applicable requirements.

(g) This subpart also does not address other business needs or legal constraints that may make it necessary for an agency to retain source records for a period of time after digitizing. Agencies should work with their legal counsel and other officials to determine whether such retention might be necessary because it relates to rights and interests, appeal rights, benefits, national security, litigation holds, or other similar reasons.

## **§ 1236.41 Definitions for this subpart.**

In addition to the definitions contained in § 1220.18 of this subchapter and § 1236.2, the following definitions apply to this subpart:

*Accuracy* is the degree to which the information correctly describes the object or process being measured. It can be thought of in terms of how close a reading or average of readings is to a true or target value. Accuracy is a different measure than precision.

*Adobe RGB* is a red, green, blue color space developed to display on computer monitors most of the colors that CMYK color printers produce. The Adobe RGB color space is significantly larger than the sRGB color space, particularly in the cyan and green regions.

*Aimpoint* is a specific value assigned to a given metric to assess performance achievement.

*Artifact (defect)* is a general term to describe a broad range of undesirable flaws or distortions in digital reproductions produced during image capture or data processing. Some common forms of image artifacts include noise, chromatic aberration, blooming, interpolation, and imperfections created by compression.

*Batch* is a group of files that are created under the same conditions or are related intellectually or physically. During digitization, batches represent groups of records that are digitized and undergo QC inspection processes together.

*Bit depth* is the number of bits used to represent each pixel in an image. The term is sometimes used to represent bits per pixel and at other times, the total number of bits used multiplied by the number of total channels. For example, a typical color image using 8 bits per channel is often referred to as a 24-bit color image (8 bits x 3 channels). Color scanners and digital cameras typically produce 24-bit (8 bits x 3 channels) images or 36-bit (12 bits x 3 channels) capture, and high-end devices can produce 48-bit (16-bit x 3 channels) images. Bit depth is also referred to as “color depth.”

*Clipping* is the abrupt truncation of a signal when the signal exceeds a system's ability to differentiate signal values above or below a particular level. In the case of images, the result is that there is no differentiation of light tones when the clipping is at the high end of signal amplitude, and no differentiation of dark tones when clipping occurs at the low end of signal amplitude.

*CMYK* is a subtractive color model used in printing that is based on cyan (C), magenta (M), yellow (Y), and black (K). These are typically referred to as “process colors.” Cyan absorbs the red component of white light, magenta absorbs green, and yellow absorbs blue. In theory, the mix of the three colors will produce black, but black ink is also used to increase the density of black in a print.

*Color accuracy* is measured by computing the color difference ( $\Delta E_{2000}$ ) between the digital imaging results of the standard target patches and their premeasured color values. By imaging an appropriate target and evaluating through the software, variances from known values can be determined, which is a good indicator of how accurately the system is recording color. Analytical software measures the average deviation of all color patches measured (the mean).

*Color channel misregistration* is the measurement of color-to-color spatial dislocation of otherwise spatially coincident color features of a digitized object.

*Color management* is using software, hardware, and procedures to measure and control color in an imaging system, including capture and display devices.

*Color space* is a specific organization of colors that supports reproducible representations of color in combination with color profiling supported by various devices. A color space can be a helpful conceptual tool for describing or understanding the color capabilities of a particular device or digital file. Examples of color spaces include Adobe RGB 1998, sRGB, ECIRGB\_v2, and ProPhoto RGB.

*Compression, lossless* is a technique for data compression that will allow the decompressed data to be exactly the same as the original data before compression, bit-for-bit.

The compression of data is achieved by coding redundant data in a more efficient manner than in the uncompressed format.

*Compression, visually lossless* is a form or manner of lossy compression where the data that is lost after the file is compressed and decompressed is not detectable to the human eye; the compressed data appearing identical to the uncompressed data.

*Digital Image Conformance Evaluation (DICE)* is the measurement and monitoring component of the Federal Agencies Digital Guidelines Initiative (FADGI) Conformance Program. The program consists of measuring ISO-compliant reference targets and using analysis software such as OpenDICE for testing and monitoring digitization programs to ensure they meet FADGI technical parameters. Agencies can access FADGI-compliant tools and resources online at <http://www.digitizationguidelines.gov/guidelines/digitize-OpenDice.html>.

*Digitization project* is any action an agency (including an agent acting on the agency's behalf, such as a contractor) takes to digitize permanent records. For example, a digitization project can range from a one-time digitization effort to a multiyear digitization process; can involve digitizing a single document into a digital records management system or digitizing boxes of records from storage facilities; or can include digitizing active records as part of an ongoing business process or digitizing inactive records for better access.

*Digitized record* is a digital record created by converting paper or other media formats to a digital form that is of sufficient authenticity, reliability, usability, and integrity to serve in place of the source record.

*Dynamic range* is the ratio between the smallest and largest possible values of a changeable quantity, frequently encountered in imaging or recorded sound. Dynamic range is another way of stating the maximum signal-to-noise ratio.

*Federal Agencies Digital Guidelines Initiative (FADGI)* is a collaborative effort by Federal agencies to articulate Technical Guidelines that form the basis for many of the technical

parameters in this part, which equate to the FADGI three-star level. Agencies can access FADGI online at <http://www.digitizationguidelines.gov/guidelines/digitize-technical.html>.

*Grayscale* is an image type lacking any chromatic data, consisting of shades of gray ranging from white to black. Most commonly seen as having 8 bits per pixel, allowing for 256 shades or levels of intensity.

*Image quality* is the degree of perceived or objective measurement of a digital image's overall accuracy in faithfully reproducing an original. A digital image created to a high degree of accuracy meets or exceeds objective performance attributes (such as level of detail, tonal and color fidelity, and correct exposure), and has minimal defects (such as noise, compression artifacts, or distortion).

*Lightness uniformity* measures how evenly a lens records the lighting of neutral reference targets from center to edge and between points within the image.

*Modulation transfer function (MTF)/spatial frequency response (SFR)* is the modulation ratio between the output image and the ideal image. SFR measures the imaging system's ability to maintain contrast between progressively smaller image details. Using these two functions, a system can make an accurate determination of resolution related to the sampling frequency.

*Newton's Rings* are interference patterns that appear as a series of concentric, alternating light and dark rings of colored light (when imaged in a color mode). This type of interference is caused when smooth transparent surfaces come into contact with small gaps of air between the surfaces. The light waves reflect from the top and bottom surfaces of the air film formed between the surfaces, causing light rays to constructively or destructively interfere with each other. The areas where there is constructive interference will appear as light bands and the areas where there is destructive interference will appear as dark bands.

*Noise* is one or more undesirable image artifact(s) in a digitized record that is not part of the source material.

*Pixels per inch (ppi)*, describes the resolution capabilities of an imaging device, such as a scanner, or the resolution of a digital image. PPI is different from dots per inch (dpi).

*Posterization* is an effect produced by reducing the number of tones (colors) in an image so that there is a noticeable distinction between one tone and another instead of a gradual shift between them.

*Precision* is the characteristic of measurement that relates to the consistency between multiple measurements, under uniform conditions, of the same item or process. As opposed to accuracy, precision does not indicate how close a measurement is to a true value.

*Quantization* is a lossy compression technique that involves compressing a range of values to a single quantum value, usually to reduce file size. This may result in flaws in an image, such as posterization, caused by reducing the data available in an image file to represent aspects like colors.

*Raster image* is a digitally encoded representation of a subject's tonal and brightness information into a bitmap. Data from digital cameras and scanning devices record light characteristics as numerical values into a grid, or raster, of picture elements (pixels).

*Reference target* is a chart of test patterns and patches with known standard values used to evaluate the performance of an imaging system.

*Reflective digitization* is a process in which an imaging system captures reflected light off of scanned objects such as bound volumes, loose pages, cartographic materials, illustrations, posters, photographic prints, or newsprint.

*Reproduction scale accuracy* measures the relationship between the physical size of the original object and the size in pixels per inch (PPI) of that object in the digital image.

*Resolution* is the level of spatial detail rendered by an imaging system as measured by MTF/SFR.

*Sampling frequency* measures the imaging spatial resolution and is computed as the physical pixel count or pixels per unit of measurement, such as pixels per inch (PPI). This

parameter provides information about the size of the original and the data needed to determine the level of detail recorded in the file. (*See also* modulation transfer function (MTF)/spatial frequency response (SFR).)

*Sharpening* artificially enhances details to create the illusion of greater definition. Image quality testing using the SFR quantifies the level of sharpening introduced by imaging systems or applied by users in post-processing actions.

*Source record* is the record from which a digitized version or digitized record is created. The source record should be the record copy that was used in the course of agency business.

*Spatial resolution* determines the amount (for example, quantity, PPI, megapixels) of data in a raster image file in terms of the number of picture elements or pixels per unit of measurement, but it does not define or guarantee the quality of the information. Spatial resolution defines how finely or widely spaced the individual pixels are from each other. The actual rendition of fine detail is more dependent on the SFR of the scanner or digital camera.

*sRGB* is a standard RGB color space created by HP and Microsoft for use on monitors, printers, and the Internet. sRGB uses the ITU-R BT.709-5 primaries that are also used in studio monitors and HDTV, and a transfer function (gamma correction) typical of CRTs (cathode ray tube TVs and computer monitors), all of which permits sRGB to be directly displayed on typical monitors. The sRGB gamma is not represented by a single numerical value. The overall gamma is approximately 2.2, consisting of a linear (gamma 1.0) section near black, and a non-linear section elsewhere involving a 2.4 exponent and a gamma changing from 1.0 through about 2.3.

*Tolerance* is the allowable deviation from a specified value.

*Tone response or optoelectronic conversion function (OECF)* is a measure of how accurately the digital imaging system converts light levels into digital pixels.

*Transmissive digitization* is a process in which the system transmits light through a photographic slide or negative.



*White balance error* is a measurement of the digital file's color neutrality. The definition of "neutral" is not universal: RGB workflows that use digital count values encode neutral as defined by the International Color Consortium (ICC) color space chosen. L\*a\*b\* workflows define neutral as 0 on the a\* axis and b\* axis, with the lightness recorded from 0-100 on the L\* axis.

#### **§ 1236.42 Records management requirements.**

(a) Before starting a digitization project, agencies must establish intellectual control of the records that will be digitized. Intellectual control means having the information necessary to identify and understand the content and context of the records. One traditional records management technique to establish intellectual control is the creation of an inventory. The inventory must identify whether the records are complete, if there are any gaps in coverage or missing records, the presence of any mixed-media records, the disposition schedule under which the records fall, the date range when the records were created, any access or use restrictions that apply to the records, and the records' storage location.

(b) Agencies must identify any relationships between the source records in order to retain these relationships between the digitized versions. For example, are there case files that are associated by case number? Does a folder contain multiple documents that are stapled together? Are there digital components of a mixed-media file stored on removable media (DVD or USB drives)? What is the relationship of the folder to other folders in a box? Any relationships must be captured as part of the digitization process:

- (1) Through metadata (See § 1236.54 for metadata requirements);
- (2) By organizing the folder structure of a file system;
- (3) By using file formats that allow for multi-page files, such as PDF or TIFF; or
- (4) Through a combination of these approaches.

(c) In addition, the inventory can be used to identify all the elements of physical control needed for the records to be digitized. Physical control includes understanding the physical characteristics of source records. Physical characteristics determine a project's scope, and the image capture techniques and equipment to be used. For example, the type of paper, the type of printing, or the size of the records can impact what methods and equipment are used to digitize records.

(d) There are additional considerations for managing the source records during the digitization process:

(1) Ensure there are appropriate safeguards for the source records to prevent their loss or damage.

(2) Restrict access to source records while they are being digitized to minimize the risk of unauthorized additions, deletions, or alterations.

(3) Ensure there is a process to identify and document gaps in coverage or missing records.

(e) Agencies must ensure that records are free from unauthorized alteration, destruction, or deletion by complying with the mechanisms and controls specified in §§ 1236.10 and 1236.20:

(1) The agency may generate checksums using the SHA-256 hash algorithm and record them as technical metadata in a recordkeeping system for each image file when digitization is complete and the agency determines that the records are no longer in active use and the metadata are no longer subject to any changes that may result from ongoing business use. Use the checksums to monitor the digitized records for corruption or alteration and capture them as metadata as required in § 1236.54; or

(2) The agency may perform file integrity monitoring or file comparison audits.

(f) If there are born-digital records that are part of the record series within the project, follow the instructions for managing mixed-media records in § 1236.52.

## **§ 1236.44 Documenting digitization projects.**

Agencies must create digital documentation when digitizing permanent source records. The agency must retain this documentation alongside the digitized records until the digitized records have been transferred to NARA and NARA has notified the agency that the accessioning process is complete. The agency must dispose of the documentation in accordance with an appropriate General Records Schedule (GRS) or agency records schedule. The required documentation will help the agency populate the Transfer Request instrument (TR) in NARA's Electronic Records Archives (ERA). The following documents are required:

- (a) A defined project plan that identifies:
  - (1) Record series or file units to be digitized;
  - (2) Method that will be used to name digitized records;
  - (3) Estimated date range of the source records;
  - (4) Missing pages;
  - (5) Gaps or missing records in the series. Depending on the type of gap or missing records, indicate if there will be charge-out cards for skipped or missing records that will be inter-filed if they are transferred at a later date;
  - (6) Estimated volume, media types, dimensions, physical characteristics, and condition of the source records;
  - (7) Equipment and software used to digitize records;
  - (8) Estimated file storage requirements for the digitized records. The file storage needs may affect project decisions, such as compression and file format;
  - (9) Any access or use restrictions that apply to the records;
  - (10) Method used to capture the relationships that exist between source records once they are digitized; and
  - (11) Any metadata element labels that differ from those specified in § 1236.54.

(b) Any information needed to associate the digitized records to the source records' agency records schedule(s) including the item numbers;

(c) Any related finding aids, indexes, inventories, logs, registers, or metadata schemas the agency uses to manage the records that can serve as sources for the metadata required in § 1236.54.

(d) A quality management (QM) plan that ensures the project meets the quality assurance (QA) objectives and quality control (QC) inspection procedures.

(1) The quality management plan must include the policies, functions, roles, responsibilities, requirements, and objectives for the project.

(2) The quality assurance component of the QM plan must include documentation of:

(i) Image quality performance parameters selected to capture the information present in the source records;

(ii) Equipment and device acceptance testing methods and results;

(iii) Design reviews to evaluate if digitization workflows meet the requirements; and

(iv) Training conducted.

(3) The quality control component of the QM plan must document:

(i) The procedures used to inspect image quality;

(ii) The procedures used to inspect metadata quality;

(iii) The corrective actions taken to mitigate deviations throughout all phases of the project; and

(iv) The procedures used to verify that digitized records conform to the requirements.

#### **§ 1236.46 Quality management requirements.**

(a) *Quality assurance (QA) requirements.* The agency must meet the image quality performance parameters specified in § 1236.50 by verifying how well the equipment meets the aim points and tolerances of the parameters. The agency cannot rely solely on equipment

specifications, such as scanner ppi settings or camera sensor megapixels, to ensure digital image quality.

(1) The agency must use QA processes to:

(i) Quantify scanner or camera performance before selecting the equipment by scanning a reference target and measuring the results with analytical software to determine if the equipment meets the technical parameters.

(ii) Evaluate internal or external vendor imaging systems against image quality performance parameters;

(iii) Monitor equipment performance by quantifying scanner or camera performance during digitization; and

(iv) Verify that resulting digital files meet project specifications.

(b) *Quality Control (QC) requirements.* The agency must implement QC inspection and monitoring processes to ensure that images meet the digitization image quality parameters in § 1236.50.

(1) The Federal Agencies Digital Guidelines Initiative (FADGI) Digital Image Conformance Evaluation program (DICE) is a QC inspection and monitoring process that uses image targets and analysis software to verify compliance. Applied properly, this methodology will ensure agencies meet the requirements in § 1236.50.

(2) If the agency does not adopt the FADGI Conformance Evaluation program, it must document both the procedures used and how it verified conformance to the quality parameters.

(c) *Quality Control (QC) testing and analysis.* During the digitization process, the agency must perform QC testing and analysis to identify malfunctioning or improperly configured digitization equipment, improper software application settings, incorrect metadata capture, or human error, and take corrective actions. It must:

(1) Implement an image quality analysis process and use reference targets to verify that digitization devices conform to imaging parameters in this subpart;

(2) Replace reference targets as they fade or accumulate dirt, scratches, and other surface marks that reduce their usability;

(3) Regularly test equipment to ensure scanners and digital cameras/copy systems are performing optimally. It must:

(i) Scan a reference target containing a grayscale, color chart, and accurate dimensional scale at the beginning of each workday;

(ii) Use image quality analysis software to verify that the performance evaluation specifications are being met; and

(iii) Perform additional tests when problems are detected.

(4) Test equipment with the specific software/device driver combination(s), and re-test after any changes to the workflow; and

(5) Ensure that equipment operation, settings, and image processing actions are the same as those used to evaluate the test target. Turn off auto correction settings in the capture equipment such as “auto exposure” that may cause non-conformance of the target evaluation or the resulting image files.

(d) *Quality control inspection.* (1) The agency must perform QC inspections of the digital records for compliance with the technical parameters and criteria specified in this subpart. The inspection must ensure 100% of the image files:

(i) Can open and be displayed;

(ii) Are encoded with a compression type and in a format specified in § 1236.48; and

(iii) Have the resolution, color mode, bit depth, and color profile specified in § 1236.50.

(2) The agency must perform a visual inspection using a statistically valid technique:

(i) The agency may visually inspect a random sample of a minimum of ten digital records or 10% of each batch of digital records, whichever is larger; or

(ii) The agency may employ a statistically valid sampling plan to verify that the image quality, file quality, metadata quality, and completeness requirements have been met. Agencies

that employ their own sampling technique must include documentation of the method used, as specified in § 1236.44(d)(3)(i).

(3) Visual inspection must be conducted using a calibrated graphics workstation and using a monitor set to 100% magnification to check the following image quality characteristics:

(i) Image tone, brightness, contrast, and color accuracy match the specifications in § 1236.50;

(ii) Images are free from clipping (missing detail lost in highlights or shadows);

(iii) Images are free from color channel misregistration, or quantization errors;

(iv) Images are free of any image artifacts that compromise the informational content of the record, such as dust, Newton's rings, missing pixels, scan lines, drop-outs, flare, or over-sharpening; and

(v) Images are not improperly cropped, have the expected dimensions and orientation (landscape/horizontal or portrait/vertical), and images are not flipped, inverted, or skewed.

(e) *Corrective measures.* If the inspection reveals errors, perform the following steps until there is a 100% success rate for the sample set:

(1) If 1% or more of examined records fail to meet any of the criteria in § 1236.50, determine the source and scope of any errors, correct or re-digitize affected records, and reinspect the images by following the requirements in paragraph (d) of this section;

(2) If less than 1% of examined records fail to meet any of the criteria in § 1236.50, determine the source and scope of any errors and correct or re-digitize the affected records.

(f) *Inspection for other quality aspects.* The agency must inspect the resulting files to verify that they meet the metadata and records completeness requirements:

(1) *Metadata quality.* The agency must evaluate the accuracy of metadata. This may be done using automated techniques if appropriate. Otherwise, the QC inspections must be done manually. These inspections must ensure that:

(i) Files are named according to project specifications; and

(ii) Correct administrative, descriptive, and technical metadata are captured in a recordkeeping system and in image files.

(2) *Records completeness.* The agency must employ automated and visual inspection processes to verify the completeness and accuracy of digitization:

(i) Verify that all records have been accounted for by referring to box lists, folder title lists, or other inventories;

(ii) Compare source records with their digitized versions to verify that 100% of the informational content has been captured;

(iii) Compare source records with their digitized versions to verify the digitized records are in the same order;

(iv) Examine records for related envelopes, notes, or other forms of media to verify that all sources of record information have been digitized;

(v) Verify that any mixed-media records that cannot be digitized are associated with the digitized records using the “Relation” metadata elements in § 1236.54(c); and

(vi) Confirm that missing pages or images have been noted in the project documentation.

#### **§ 1236.48 File format requirements.**

(a) The agency must encode, retain, and transfer digitized records in one of the following file formats, either uncompressed or using one of the specified compression codecs in tables 1 and 2 to this section.

(1) Agencies that combine multiple uncompressed TIFF images into PDF/A files using JPEG2000 compression must perform the quality inspection step specified in 1236.46(d) against the resulting PDF/A files.

(2) When using JPEG 2000 visually lossless compression, agencies must determine the amount of compression to apply, not to exceed 20:1, by performing tests and visually evaluating for compression artifacts that obscure or alter the information content.



(b) The agency must encode, retain, and transfer digitized permanent paper records in one of the following file formats, either uncompressed or with one of the compression codecs specified in table 1 to this paragraph (b).

**Table 1 to Paragraph (b)—File Format Requirements for Digitized Permanent Paper Records Table**

<b>Format Name and Version</b>	<b>Acceptable Compression Codecs</b>
TIFF 6.0	Uncompressed, Deflate (ZIP)
JPEG2000 part 1 (ISO/IEC 15444-1:2019)	JPEG 2000 part 1 core coding system lossless compression. Agencies may use up to 20:1 visually lossless compression.
Portable network graphics 1.2 (PNG)	Deflate (ZIP)
PDF/A  (Select any version of PDF/A that meets project requirements. However, do not use the attachments feature in PDF/A-3 or PDF/A-4.	Deflate (ZIP), JPEG 2000 part 1 core coding system lossless compression. Agencies may use up to 20:1 visually lossless compression.

(c) The agency must encode, retain, and transfer digitized photographic print records in one of the following file formats, either uncompressed or with one of the compression codecs specified in the table 2 to this paragraph (c).

(1) For a series of predominantly textual records with interspersed photographic prints, use the formats in table 1 to paragraph (b) of this section for paper records. All photographic prints must be digitized according to the standards in § 1236.50.

(2) For a series of predominantly printed photographs, including those with paper records interspersed, use the file formats in table 2 to this paragraph (c) for photographic print records.

(3) However, the agency must not transcode, or interpolate (upsample) files anywhere in the workflow.

**Table 2 to Paragraph (c)—File Format Requirements for Digitized Permanent Photographic Print Records Table**

<b>Format Name and Version</b>	<b>Acceptable Compression Codecs</b>
TIFF 6.0	Uncompressed, Deflate (ZIP)
JPEG2000 part 1 (ISO/IEC 15444-1:2019)	JPEG 2000 part 1 core coding system lossless compression. Agencies may use up to 20:1 visually lossless compression.
Portable network graphics 1.2 (PNG)	Deflate (ZIP)

**§ 1236.50 Requirements for digitizing permanent paper and photographic print records.**

(a) *Overview.* This section describes the minimum requirements appropriate for digitizing paper records. Depending on the physical characteristics of the source records, the agency must select the applicable specifications described in either table 1 to paragraph (d) of this section for modern textual paper records or the table 2 to paragraph (e) of this section for photographic prints and paper records with fine details. Agencies must implement appropriate equipment, lighting, special handling, or imaging methods to ensure the capture of all information. Agencies may exceed these requirements, if necessary, to capture fine detail or to meet their own business needs.

(b) *Image quality parameters.* The performance parameters are based on FADGI three-star aim points and tolerance ranges.

(c) *Equipment requirements.* The equipment used to digitize Federal records must be appropriate for the media type, and capable of achieving documented project objectives without damaging the source records.

(d) *Requirements for digitizing modern textual paper records.* For these records, produce image files at a minimum of 300 ppi sized to the source document.

(1) Records suitable for the specifications in table 1 to this paragraph (d) for modern textual paper records are modern textual documents with a well-defined printed type (such as typeset, typed, laser-printed), and with moderate to high contrast between the ink of the text and the paper background. Performance metric values in table 1 for modern textual paper records conform to the FADGI “Documents (Unbound): Modern Textual Records” category, and are appropriate when source records do not have visible content with L\* values darker than 20. Neutral reference patches on the evaluation test target with L\* less than 20 are not used for analysis.

(2) For other paper records such as manuscripts, illustrations, graphics, and documents with poor legibility or diffuse characters (such as carbon copies or Thermofax) that have visible content with L\* values darker than 20, agencies must evaluate neutral reference patches on the evaluation test target with L\* greater than 20. (These values equate to FADGI three-star for “Documents (Unbound): General Collections”).

(3) The agency must digitize in an acceptable RGB color mode if records contain color or other characteristics that are necessary to interpret the information of the source record, or that would be lost when digitizing using grayscale gamma 2.2.

(4) At a minimum, the agency must digitize the paper records covered by this paragraph to the following parameters:

**Table 1 to Paragraph (d)— Requirements for Digitizing Permanent, Modern Textual**

**Paper Records Table**

<b>Digital file specifications</b>	<b>Attributes</b>
Color mode	color or grayscale
Bit depth	8 or 16
Color space	gray gamma 2.2, AdobeRGB1998, sRGB, ProPhoto RGB, ECIRGBv2
Resolution (Sampling Frequency) (Units are Pixels Per Inch/ppi minus Reproduction Scale Accuracy)	$\geq 294$ ppi (300 ppi – 2%)
<b>Measurement parameters</b>	<b>Performance metric values Difference from aim (applies to <math>20 \leq L^* \leq 100</math>)</b>
Tone Response (OECF) $L^*$ (Units Colorimetric $\Delta L^*$ ) gray patches that meet the measurement parameters	+/- 5
White Balance (Units Colorimetric $\Delta E(a^*b^*)$ ) gray patches that meet the measurement parameters	$\leq 4\%$
Lightness Uniformity (Units Colorimetric – Standard Deviation Divided by Mean $L^*$ )	$\leq 3\%$
Average Color Accuracy (Units Colorimetric - Mean $\Delta E$ 2000 – for patches meeting the measurement parameters)	$\leq 3.5$
Color Accuracy 90 <sup>th</sup> Percentile (Units Colorimetric – 2.5 times average deviation for patches meeting the measurement parameters)	$\leq 8.75$
Color Channel Misregistration (Units Pixels)	$\leq 0.5$ pixel
SFR 10 (Sampling Efficiency) (Measurement is a Ratio %)	$\geq 80\%$
MTF50 (50% SFR) (Percentage of Half Sampling Frequency) [Lower, Upper]	Percentage of half sampling frequency: [>40%, <75%]
Reproduction Scale Accuracy (Units % Difference from Header PPI)	<+/- 2%
Sharpening (Units Max Modulation)	< 1.1
Noise (Upper Limit) (Units Std Dev of $L^*$ )	$\leq 2$
Noise (Warning Limit) (Units Std Dev of $L^*$ )	$\geq .25$

(e) *Requirements for digitizing photographic prints and paper records that have fine details.* Records that have fine detail, require a high degree of color accuracy, or have other unique characteristics, must be captured using the specifications in table 2 to this paragraph (e) for photographic prints and paper records with fine details. For these records, produce image files (as described table 2) at a minimum of 400 ppi sized to the source document (these performance values equate to FADGI three-star category “Prints and Photographs”). It may be necessary to apply a higher resolution than the minimum for some records that have fine detail.

(1) These specifications apply to records such as photographic prints, graphic-arts prints (for example, lithographs or intaglio), drawings, embossed seals, and records that have information that cannot be captured by the parameters in table 1 to paragraph (d) of this section for modern textual paper records.

(i) For records in which the smallest significant detail is 1.0 mm or smaller, such as aerial photographs and topographic maps (which require a high degree of enlargement and precision to ensure the dimensional accuracy of the scans), the agency must increase the resolution to capture all the information in the source record.

(ii) For many imaging devices, increasing the ppi settings may not increase the actual resolution level or capture the desired detail. The equipment for digitizing records with fine detail must be capable of meeting the higher quality parameters. It may be necessary to exceed the parameters in table 2 to this paragraph (e) to capture all the information inherent in the records.

(2) The agency must digitize photographic prints, including monochrome and black and white, using a color mode.

(3) The agency must digitize in an acceptable color mode if records contain color or other characteristics that are necessary to interpret the information of the source record, or that would be lost when digitizing using grayscale gamma 2.2.

(4) At a minimum, agencies must digitize all records covered by this paragraph to the following parameters:

**Table 2 to Paragraph (e)-Requirements for Digitizing Permanent, Photographic Print Records and Paper Records that have Fine Details Table**

Digital file specifications	Attributes
Color mode	color or grayscale
Bit depth	8 or 16
Color space	Gray gamma 2.2, AdobeRGB1998, ProPhoto RGB, ECIRGBv2
Resolution (Sampling Frequency) (Units are Pixels Per Inch/ppi minus Reproduction Scale Accuracy)	$\geq 392$ ppi (400 ppi – 2%)
Measurement parameters	Performance metric values
Tone Response (OECF) L* (Units Colorimetric $\Delta L_{2000}^*$ ) for any given gray patch	+/- 4
White Balance (Units Colorimetric $\Delta E(a^*b^*)$ ) for any given gray patch	$\leq 4$
Lightness Uniformity (Units Colorimetric – Standard Deviation Divided by Mean)	$< 3\%$
Average Color Accuracy (Units Colorimetric - Mean $\Delta E_{2000}$ – average deviation of all patches)	$< 3.5$
Color Accuracy 90 <sup>th</sup> Percentile (Units Colorimetric – 2.5 times average deviation of all patches)	$\leq 8.75$
Color Channel Misregistration (Units Pixels)	$\leq 0.5$ pixel
SFR10 (Sampling Efficiency) (Measurement is a Ratio %)	$\geq 80\%$
SFR50 (50% SFR) (Units Percentage of Half Sampling Frequency) [Lower, Upper]	Percentage of half sampling frequency: [>40%, <75%]

Reproduction Scale Accuracy (Units % Difference from Header PPI)	<+/- 2%
Sharpening (Units Max Modulation)	< 1.1
Noise (Upper Limit) (Units Std Dev of L*)	≤ 2
Noise (Lower Limit) (Units Std Dev of L*) – A warning should be raised if the image doesn't meet this criteria	≥ .25

### **§ 1236.52 Requirements for digitizing permanent mixed-media records.**

Mixed-media files are records that belong together or relate to a common topic and are stored on more than one media type. Mixed-media files result from the processes agencies use to create, maintain, and use records. For example, a case file may include paper records, online digital records, and digital records on storage media.

(a) For any non-paper media, agencies must analyze the contents to determine whether any files are records.

(1) If the media contains records that are temporary, manage them according to their appropriate GRS or agency-specific records authority.

(2) If the media contains records that are permanent, but not part of the digitized record series, locate their disposition schedule and capture them in a digital information system that complies with the requirements in § 1222.26 of this subchapter and §§ 1236.10 through 1236.14.

(3) If the media contains born-digital components of mixed-media files that are related to the digitized records series, capture the born-digital records in a recordkeeping system in accordance with § 1222.26 of this subchapter and associate the born-digital records with any related records once they are digitized using the “Relation” metadata elements in § 1236.54.

(4) If they are permanent records stored on a media type that is out of scope for this subpart, document this information according to the instructions in § 1236.44. Agencies must

maintain the association between records using the “Relation” metadata elements specified in § 1236.54.

(b) Contact the Records Management Policy and Standards Team at *rmstandards@nara.gov* for guidance on what to do with types of media in a mixed-media file that are outside the scope of this subpart, such as dynamic media, x-rays, negative or positive film, or other special media types.

#### **§ 1236.54 Metadata requirements.**

(a) *General.* To ensure that intellectual and physical control of the digital records can be maintained, this regulation specifies metadata elements that must be captured in a recordkeeping system, or embedded in each file, or both captured in a recordkeeping system and embedded in each file. Ensure that the metadata remains accurate and consistent regardless of where it is stored.

(1) If using metadata to capture relationships between source records as required in § 1236.42(b), agencies must use the “Relation” metadata elements in table 1 to paragraph (c)(1) of this section for basic administrative metadata.

(2) If using different metadata labels from the ones required in this section, agencies must document the labels that the agency uses and note this in the Details section of the ERA (Electronic Records Archive) Transfer Request (TR).

(3) Determine the appropriate level to be used as the source of descriptive metadata. Depending on the agency’s existing recordkeeping practices and level of intellectual control, use information from the project, record series, file unit, or item level as the source for administrative, technical, and descriptive metadata fields. If the components of a record have not been individually indexed with unique descriptions, apply the series or file unit-level descriptions to all of the image files within that grouping. If the components of the record do not have individual titles, the agency must apply the item Record IDs instead.



(4) Include additional metadata if it is captured. If other metadata elements are provided in addition to the metadata requirements in this subpart, NARA will accept that metadata as part of the transfer process.

(b) *Metadata capture requirements.* Agencies must:

(1) Capture the metadata specified by paragraphs (c) through (e) of this section at the file or item level as part of the digitization project;

(2) Create file names and record IDs that are unique to each image file;

(3) Embed the metadata specified by paragraph (c) of this section in each image file, capture and maintain it in a recordkeeping system, associate it with the records it describes, and keep it consistent and accurate in both places;

(4) Ensure that scanning equipment embeds the system-generated technical metadata specified by table 4 to paragraph (e)(1) of this section for format technical metadata and table 5 to paragraph (e)(2) of this section for processing technical metadata in each image file, and ensure that image processing does not alter or delete it; and

(5) Transfer metadata to NARA in CSV format.

(c) *Administrative metadata.* (1) Capture in a recordkeeping system and embed in each image file the following administrative metadata:

**Table 1 to Paragraph (c)(1)—Basic Administrative Metadata**

<b>Metadata Label</b>	<b>Description</b>	<b>Requirement level</b>
Identifier: File Name	The complete name of the computer file, including its extension.	Mandatory (file names are an inherent attribute of each file so there is no need to embed them as an element of metadata)
Identifier: Record ID	The unique identifier assigned by an agency or a records management system. 36 CFR 1236.20(b)(1) requires that agencies assign unique identifiers to each record.	Mandatory

Identifier: Records Schedule Item #	The number assigned to the agency records schedule or GRS item to which the record belongs.	Mandatory
Relation: Has Part	A related record that is either physically or logically required in order to form a complete record. Mixed-media files that contain records on multiple media types must use this element to identify all components.	Mandatory if a record includes multiple parts, such as the component parts of a case file or mixed-media file
Relation: Is Part Of	A related record or file in which the described record is physically or logically included. Use this element to indicate that a record is a component of a mixed-media file.	Mandatory if file is a component of a multi-part record

(2) Capture in a recordkeeping system and embed in each file any of the following access and use restrictions the metadata inherited from the source records:

**Table 2 to Paragraph (c)(2)—Access and Use Restrictions Administrative Metadata**

Metadata Label	Required Fields	Description	Requirement level
Access Restrictions	Access Restriction Status	Indicate whether or not there are access restrictions on the record.	Mandatory
	Specific Access Restriction	Specific access restrictions on the record, based on national security considerations, donor restrictions, court orders, and other statutory or regulatory provisions, including Privacy Act and Freedom of Information Act (FOIA) exemptions.	Mandatory if access restriction exists
Use Restrictions	Use Restriction Status	Indicate whether or not there are use restrictions on the record.	Mandatory
	Specific Use Restriction	The type of use restrictions on the record, based on copyright, trademark, service mark, donor, or statutory provisions.	Mandatory if use restriction exists

Rights: Rights Holder	A person or organization owning or managing intellectual property rights relating to the record.	Mandatory if there is a rights holder
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(d) *Descriptive metadata.* Capture the following descriptive metadata from source records at the lowest level needed to support access and preservation and to maintain contextual information. Depending on the agency’s existing recordkeeping practices and level of intellectual control, it may use information from the project level, record series, file unit, or item, as the source for descriptive metadata. If the components of a record have not been individually indexed with unique descriptions, apply the series or file unit-level descriptions to all of the image files within that grouping. If source records share a common material type or dimensions, auto-populate the source type and source dimension metadata. If the components of the record do not have individual titles, the agency must apply the item Record IDs instead. Capture the metadata in a recordkeeping system for each image file:

**Table 3 to Paragraph (d)—Descriptive Metadata Table**

Metadata Label	Description	Requirement level
Title	A name given to the source record. If a name does not exist, the mandatory metadata element Identifier: Record ID serves as the title for the record.	Mandatory
Description	A narrative description of the content of the record, including abstracts of documents.	Mandatory
Creator	The agent (person, agency, other organization, etc.) primarily responsible for creating the source record.	Mandatory
Date: Creation Date	The date or date range indicating when the source record met the definition of a Federal record.	Mandatory
Source Type	The medium of the source record that was scanned to create a digital still image.	Mandatory
Source Dimensions	The dimensions of the source record (including unit of measure).	Mandatory

(e) *Technical metadata.* (1) Ensure that the following values are embedded in each image file and that image processing does not delete or alter them:

**Table 4 to Paragraph (e)(1)—Technical Metadata – Image Table**

Metadata Label	Definition	Requirement level
Date Time Created	The date or date-and-time the digital image was created.	Mandatory
Image Width	The width of the digital image, <i>i.e.</i> , horizontal or X dimension, in pixels.	Mandatory
Image Height	The height of the digital image, <i>i.e.</i> , vertical or Y dimension, in pixels.	Mandatory
Color Space	The name of the International Color Consortium (ICC) profile used.	Mandatory
Bits Per Sample	Number of bits per component.	Mandatory
Samples Per Pixel	The number of components per pixel. Usually, 1 for grayscale images and 3 for RGB images.	Mandatory

(2) Ensure that the following process metadata elements are recorded for each image file:

**Table 5 to Paragraph (e)(2) Technical Metadata – Process Table**

Metadata Label	Definition	Requirement level
Scanner Make and Model	The manufacturer and model of the scanner used to create the image.	Mandatory if using a scanner
Digital Camera Make and Model	The manufacturer and model of the digital camera used to create the image.	Mandatory if using a digital camera
Software Name and Version	The name and version of the software used to capture the image.	Mandatory if using scanning software

(3) Capture the following technical metadata in a recordkeeping system for each image file, and use them to monitor digital records for corruption or alteration:

**Table 6 to Paragraph (e)(3)—Technical Metadata – Checksum Table**

<b>Fixity Metadata Label</b>	<b>Description</b>	<b>Requirement level</b>
Message Digest Algorithm	The specific algorithm used to construct the message digest for the digital object or bitstream.	Mandatory if using checksums as described in § 1236.42(e)(1)
Message Digest (checksum)	The output of Message Digest Algorithm.	Mandatory if using checksums as described in § 1236.42(e)(1)

### **§ 1236.56 Validating digitized records and disposition authorities.**

(a) When a digitization project is complete, the agency must validate that the digitized versions meet the standards in this subpart.

(b) Separate staff must conduct the validation, independent from the staff that performed the digitization QC inspections described in § 1236.46.

(c) Agencies must verify that:

(1) All records identified in the project's scope have either been digitized or have been identified in project documentation as missing or incomplete records (and the agency must note this information in the Details section of the ERA TR when transferring the records);

(2) All required metadata are accurate, complete, and correctly labeled;

(3) All image technical attributes specified in § 1236.50 have been met;

(4) All image files are legible and all physical characteristics necessary to understand and use the records have been captured;

(5) Mixed-media files are digitized appropriately for the material type, or if mixed-media components are retained in their original format, they are associated with digitized components through metadata, per the requirements specified in § 1236.54(c); and

(6) Project documentation has been created according to § 1236.44.

(d) Once validated, the digitized records are permanent records.

(e) After validating, the agency must determine whether the agency has any reasons for retaining the source records for a period of time once digitized, in keeping with § 1236.40(g).

(f) Unless source records will be retained for reasons identified in § 1236.40(g), the agency must dispose of the source records in accordance with an agency records schedule or GRS that addresses disposition after digitization.

(g) Agencies cannot use the GRS to dispose of source records if the digitized records do not meet the requirements in this subpart. In such cases, agencies should contact the Records Management Policy and Standards Team at *rmstandards@nara.gov* to determine what steps they must take.

(h) Agencies must transfer the digitized records to NARA according to the approved disposition authority and include the transfer metadata as described in § 1236.58.

(i) Agencies must retain the project documentation described in § 1236.44 until the National Archives confirms receipt of the records and legal custody of the records has been transferred.

(j) Agencies must transfer the administrative, technical, and descriptive metadata captured during the digitization project as CSV files, as described in § 1236.54(b)(6), with the resulting digitized records.

8. Add subpart F, consisting of § 1236.58, to read as follows:

#### **Subpart F -- Transfer Metadata**

##### **§ 1236.58 Transfer metadata.**

When agencies transfer permanent records to the National Archives' legal and physical custody, the agency must provide transfer metadata to NARA. The transfer metadata must be entered into the Electronic Records Archives (ERA) when the Transfer Request (TR) is created to begin transferring the records. Each transfer of digital records must include the following metadata that applies to the transfer as a whole:

##### **Table 1 to § 1236.58—Transfer Metadata Table**

Metadata Label	Required Fields	Description	Requirement level
Transfer Request Number	Transfer Request Number	The number automatically generated when a Transfer Request is created.	Mandatory
Transfer Title	Transfer Title	The name assigned to the collection, set or series of records the agency is transferring to NARA.	Mandatory
Dates	Inclusive Start Date	The beginning date on which the record group, collection, series, or set the agency is transferring to NARA was created, maintained, or accumulated by the creator.	Mandatory
	Inclusive End Date	The last date on which the record group, collection, series, or set the agency is transferring to NARA was created, maintained, or accumulated by the creator.	Mandatory
Creating Organization	Creating Organization	The name of the organization responsible for creating, accumulating, or maintaining the collection, series, or set when in working (primary) use.	Mandatory
Record Group Number	Parent Record Group Number	The unique number assigned to a record group.	Mandatory
General Records Type	General Records Type	The general form of the records set, series, or collection the agency is transferring,	Mandatory

		including but not limited to: architectural and engineering drawings, artifacts, data files, maps and charts, moving images, photographs, and other graphic materials, sound recordings, textual records, or web pages.	
Access Restrictions	Access Restriction Status	Indicate whether or not there are access restrictions on the set, collection, or series of records the agency is transferring to NARA.	Mandatory
	Specific Access Restriction	Specific access restrictions on the set, collection, or series of records, including but not limited to: restrictions based on national security considerations, donor restrictions, court orders, and other statutory or regulatory provisions, including Privacy Act and Freedom of Information Act (FOIA) exemptions.	Mandatory if access restriction exists
Use Restrictions	Use Restriction Status	Indicate whether or not there are use restrictions on the set, collection, or series of records transferring to NARA.	Mandatory



	Specific Use Restriction	The type of use restrictions on the set, collection, or series of records, including but not limited to restrictions based on: copyright, trademark, service mark, donor, or statutory provisions, including Privacy Act and Freedom of Information Act (FOIA) exemptions.	Mandatory if use restriction exists
Records Schedule Number	Records Schedule Number	The number NARA assigned to the agency records schedule that applies to all the records in the collection, series, or set transferring.	Mandatory

DEBRA STEIDEL WALL

Acting Archivist of the United States

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